

## Home Work

Estimate the optimal solution of Dual from the optimal solution of primal:

$$\text{Max } Z = 5 X_1 + 12 X_2 + 4 X_3 + 0 S_1 + 0 R$$

Basic	X1	X2	X3	S1	R	Sol.
Z	0	0	3/5	29/5	-2/5+M	54 4/5
X2	0	1	-1/5	2/5	-1/5	5/12
X1	1	0	7/5	1/5	2/5	26/5

1<sup>st</sup> Method:

(Variables Values) = (Corresponding basic variable coefficient in the same order)[Inverse Matrix]

$$(Y_1 \ Y_2) = (12 \ 5) \begin{pmatrix} 2/5 & -1/5 \\ 1/5 & 2/5 \end{pmatrix} = (29/5 \ -2/5)$$

$$Y_1^* = 29/5 \qquad Y_2^* = -2/5 \qquad Z^* = W^* = 54 \frac{4}{5}$$

2<sup>nd</sup> Method:

(Objective Coefficient Of a variable J .. c J ) = L.H.S – R.H.S of the corresponding constraint.

Basic	X1	X2	X3	S1	R	Sol.
Z	0	0	3/5	29/5	-2/5+M	54 4/5
X2	0	1	-1/5	2/5	-1/5	5/12
X1	1	0	7/5	1/5	2/5	26/5

$$S_1: \quad Y_1 \geq 0 \qquad 29/5 = Y_1 - 0 \qquad Y_1^* = 29/5$$

$$R: \quad Y_2 \geq -M \qquad -2/5 + M = Y_2 + M \qquad Y_2^* = -2/5$$

$$Z^* = W^* = 54 \frac{4}{5}$$

Estimate the optimal solution of Primal from the optimal solution of Dual:

Complete!!

